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Radiography

DISCUSSION BY THE CENTRAL VETERINARY SOCIETY

[We reproduce below a report of the discussion on radiography by the Central Veterinary Society at its November, 1946, meeting, when the principal speakers were Major W. Hamilton Kirk, Mr. Gordon C. Knight and Mr. W. R. Muir.]

Major W. HAMILTON KIRK confined his remarks to the use of a mobile or portable X-ray set. The number of veterinary surgeons who had become, or were becoming, radiographers, was on the increase; but it was doubtful if many of them would ever acquire such an expensive and high powered set as was installed at the Royal Veterinary College.

Some might remember the speaker's first address on radiography, and an exhibition of his apparatus and radiographs to that Society some 15 years ago.

That apparatus was of the well-known Philips' Metalix type, a type which permitted no variation in its working other than in focus-film distance and time of exposure. It gave, however, most excellent service in spite of its supposed disabilities, and it certainly was an excellent set for the non-electrically-minded practitioner who had not the time and possibly not the inclination to study radiology, but merely wanted quick results. Its peak kilovoltage output was 45 on a tube current of 5 mA. Its consumption of main current would then be 3½ amps., which made it possible to use it on an ordinary electric lighting circuit.

He had been able to radiograph all parts of the dog, and the limbs of horses and cattle from the foot to the stifle and the elbow, and the results had been consistently good; and certainly satisfactory to those who had employed him.

Recently, however, owing to the increasing demands of farmers, racehorse trainers and others, for X-ray diagnosis, he had decided to acquire a much higher powered set in order—primarily—that he could appreciably reduce the exposure times and obtain better radiographs of such dense joints as the stifle and elbow of the horse. This apparatus was the Watson (portable) type MX2. It was completely portable, even the stand taking to pieces without any tools whatever. The peak output was 80 kV. with a peak tube current of 15 mA., and there would be few accessible parts indeed of any domestic animal which could not be radiographed with such power. The apparatus comprised all the newest developments of design—principally that the transformer, instead of being a separate unit, was housed along with the tube itself, thereby dispensing with the need for high tension cables. This greatly facilitated the radiography of horses, especially when a hind leg needed to be done. He always made the exposure of a hind leg in an antero-posterior direction because he considered it unwise to place the apparatus *behind* a horse's hoofs. It was something of an acrobatic feat with his old set (and not devoid of hazard), to X-ray hind legs. There were the tube on a stand, two short, heavy cables and a 56 lb. transformer, all close at hand beneath the horse's belly; and if the animal got frightened he had to grab the lot and quickly move away. The worst experience he ever had was on a Sussex farm this summer, on one of the few hot days that occurred. A highly bred hunter mare with an excitable little foal at hand and which had never been handled, was brought out into the straw- and manure-covered yard—which could not be cleaned up. He had to remain near the source of electricity and so had to make the best of it. The mare was fidgety not only from pain, but from plagues of wasps and horse flies; and she had a four-foot tail which occasionally gave him a stinging swipe. Each attempt at exposing a film was interrupted either by the horse lifting its leg or by the foal careering round the yard and upsetting the dam. With much patience and perspiration he did eventually secure five good radiographs.

When consideration was given to the besmirching of the apparatus, the risk of its being smashed, and the danger to the operator, it was clear to see why the fees asked for this service might seem high.

X-ray manufacturers had done nothing so far in the way of evolving an apparatus eminently suitable to both large or small animals. It was not even possible to buy a cassette capable of taking a horse's weight without damage to it. But the Watson apparatus conformed most nearly to the requirements of the equine radiographer so far as he had been able to ascertain from personal experience. Anyone who acquired such an apparatus and contemplated using it (as he did) on different premises, where lighting circuits and electrical conditions generally, varied considerably, would have to pay very close attention to these varying conditions.

If the set were plugged into an ordinary house lighting circuit, the fuse would be blown. It required 12 amps, and the utmost amperage generally obtainable on a lighting circuit was about 5 amps. If the capacity of the mains should be inadequate it was, of course, still possible to operate the apparatus at less than its maximum output. For example, if the tube current was set at half its maximum value, *viz.*, 7·5 mA., the mains current used at 230 volts would be 6 instead of 12 amps. But even to consume 6 amps. would overload a 5-amp. circuit and possibly blow the fuse. In such cases it would be a preliminary necessity to locate the household fuse box, ascertain which fuse would be in use, and rewire it with a No. 21 special wire gauge lead-tin alloy fuse wire. With this one could operate at 80 kV. and 15 mA. on supplies of voltages down to 230 volts.

Supplies with voltages between 230 and 190 volts necessitated the tube current being restricted to 7·5 mA. and supplies with voltages between 190 and 110 volts necessitated the tube current being restricted to 5 mA.

With supplies of less than 110 volts it was not possible to operate the unit on a 5-amp. lighting circuit. In all cases it was of course possible to operate *only* on an alternating current. If direct current had to be used a rotary converter was required.

When houses or farms were to be visited for the purpose of radiography, these were the questions to which answers were needed:—

1. What is the type of current, AC or DC?
2. What is the line voltage?
3. Is there a "power" circuit (indicated by power plugs and a power meter)? If so, this would permit of the apparatus being operated at 15 mA. if desired.
4. Is there only a lighting circuit, and does the house normally burn a one-bar or a two-bar electric fire? A two-bar (or 2 kW.) fire would indicate a 10-amp. current.
5. Is there a water pipe within 20 yards, or anything to which an earth wire can be attached?
6. Is there a cellar or closet which can be converted into a really dark room—for processing?
7. Has it an electric point for the red lamp?

It was important that the apparatus should be properly earthed, in the interests of safety. A gas pipe should not be used; but a metal object could be driven into the earth and the wire attached to it. If the mains supply was available from a three-pin socket, the brown wire of the mains cable had to be connected to the earthed pin. In the event of only a two-pin mains socket being available the brown covered wire of the mains cable must be connected to an improvised earth, such as a water pipe, etc. Alternatively an earth wire might be clipped on to the tube stand, and be taken directly to earth, thus abolishing the use of the third wire in the mains cable.

It was important also to remember that the lower the mains voltage the greater the amperage of current will be consumed when the milliamperage of the tube is set at 15. For instance, with a mains voltage of 250 and the milliamperage of the tube set at 15, 10 amps. would be consumed, but if the voltage is 110, as much as 28 amps. would be consumed, and that would blow the fuses.

He made it a practice, when travelling far from home for the purpose of X-raying animals, to develop his films on the spot. The variations with electric supply, the movements of animals, and one or two other circumstances—all tended to militate against satisfactory results; in addition to which some very interesting conditions might be found which would merit the exposure of further films.

The importance of good processing could hardly be over-emphasized. The dark room must be *really* dark, or super-sensitive films might be fogged. It was surprising how much light could be appreciated by eyes which had been for some minutes in the dark. The newness or staleness of the developer was of great

importance, an old or much used solution giving very indifferent results.

With regard to the uses of X-rays in diagnosis, many people expected to be able to detect almost any condition by this means. He was frequently asked to X-ray for ailments which never could be divulged by such a method. The whole principle of a radiograph was its contrasts in light and shade; thus opaque bodies were clearly shown, whilst translucent soft tissues were not. Nevertheless, alterations in density, or continuity, of soft tissues were usually discernible; as illustrations of which we had the opacities to be found in lungs when these were hepatized; the gross deviation of the oesophageal or tracheal shadows when a retro-pharyngeal abscess existed; the close apposition of two bones when the interosseous soft cartilage had become thinned or eroded; and the definite delineation of interosseous cartilages which had become calcified, etc., etc.

Much more could be learned of the soft tissues by using contrast agents—such, for instance, as ascertaining the depth and direction of sinuses; the outlining of stomach and intestinal shadows; the existence of growths in the bladder or alterations to its wall; the presence of diaphragmatic hernia, and the delineation of the renal pelves and the ureters, etc.

There were in fact so many conditions which could be diagnosed by radiography that it would be wearisome to recapitulate them. There were, however, more limitations to successful radiography in the large animals, on account of the much greater depth and density of some of the parts we would wish to X-ray. A racehorse trainer once telegraphed him to come at once and X-ray a horse's spine. So far as he knew, there was not any apparatus in existence which could do that. The scattering of rays in penetrating such a mass of tissue would obliterate the picture.

In the past he had also found some difficulty in obtaining satisfactory films of the horse's elbow. There was so little space available behind it for the introduction of a cassette, that often little more than the head of the ulnar could be seen. Similarly, a postero-anterior radiograph of the stifle would in many cases be of poor quality. With his new high powered set he anticipated obtaining good lateral pictures of the stifle. Even with his old set, he was able to demonstrate a crack in the lower ramus of a horse—which fact settled an insurance dispute.

All bony conditions of the horse's leg such as ringbones (high and low), sidebones, periostitis, fractures, etc., could be revealed—as also could horn tumours and erosions of the navicular bone.

For the delineation of foetuses in the dog and cat, or for thin bones such as those of kittens or of subjects of rickets, a low kilovoltage was employed—somewhere around 50. On the other hand, for dense tissues such as the hoof or hock of the horse, barium meals, or the grossly fat dog, a high kilovoltage of deep penetration—say 75 to 80—might be required. As a general rule, however, it was more satisfactory to keep the kV. as low as possible. The amount of kV. employed did not depend actually on the milliamperage used. The latter should generally be as high as possible, as it influenced the degree of blackening or contrast of the film. But the more mA. employed, the less exposure time was needed; and that was a matter of importance with animals. Flat, grey and lifeless films usually indicated excessive kV., or insufficient time or milliamperage. As already mentioned, too much kV. caused a loss of contrast.

If a fairly high kV. was used on a *5-amp.* (mains) supply, the milliamperage must be reduced, and that meant that the exposure time must be increased. It was well to remember, however, that if the distance between the tube and the film could be halved a quarter the time of exposure sufficed. [It should be remembered that milliamperage multiplied by kilovoltage gave the wattage.] It might be well to remind those who had forgotten, that amperage was the volume or strength of current, whilst voltage was the pressure behind it. The watt was a unit of consumption of current.

It was not unusual for colleagues to come to him to ask to have animals "screened." Although he did this if obliged to do so, he really preferred not, and for several reasons. Firstly, by the time the location and nature of the abnormality had been ascertained, the current would probably have been on for a minute or more. This excessive heating tended to shorten the life of the tube—which was an important economic factor. Secondly, there was a very real danger to the person who was continually doing this work, as—unless he wore a lead apron and lead gloves—he would be accumulating more and more doses of X-rays until he finally contracted the most resistant ulcerative dermatitis. These gloves and aprons were very expensive and at the moment almost unobtainable. If screening was insisted upon, one should be careful to affix one of the restricting lead applicators or cones to the tube aperture. These confined the rays to a known and reduced area. Thirdly, when using a screen the room had to be completely blacked out and one's eyes accustomed for a few minutes to the dark. Lastly, no record of the condition had been obtained for later study or for filming as would be the case with a radiograph; and the saving in time was negligible.

For screening, the tube current must not exceed 3 mA. A high milliamperage was very dangerous to the operator—more so than high kilovoltage.

He had omitted from this short paper any reference to radiographic diagnostic appearances of films, as Mr. Knight dealt with that aspect of the subject.

One point must be emphasized, that development must always be for five minutes, and always with the solution at a temperature of 65° F. Only by standardizing the dark room work could a correct scale of exposure times and current strengths to suit the greatly varying tissues of many different animals be evolved.

Mr. G. C. Knight described and illustrated with lantern slides of radiographs some unusual bone conditions in small animals. The first condition to be demonstrated, he said, had been called, rightly or wrongly, leontiasis ossea as it appeared to justify that name by comparison with a similar disease in man. In the human subject one type of leontiasis ossea was recognized as being localized to the facial bones and was described as a creeping periostitis developing at about adolescence and causing a painless slow increase in the size of the affected bones. The blood chemistry in these cases was said to remain within normal limits. At the Royal Veterinary College were records of five such cases, all in Scottish terrier bitches of from five to seven months old. The symptoms were a diffuse and practically painless swelling of one or both rami of the mandible, with a little softening of the jaw and some lack of firmness of the teeth. Two of the affected animals were litter sisters, the owner breeder of which had noted that teething had seemed to be an unusually painful process, that the appetites of both puppies had always been somewhat depraved and that there had been an exceptional taste for fallen leaves and catkins. The puppies were also seen frequently licking walls and concrete flooring. From weaning time each animal had been given 5 drops of halibut liver oil and 5 grains of calcium gluconate daily in addition to a diet which had previously been successful in rearing prize-winning Scottish terriers.

Mr. W. R. Muir, who examined blood samples from the two affected puppies, concluded there was mineral deficiency. His recommendations on diet were put into effect and appeared to give very satisfactory results, inasmuch as the animal's jaws, after a period of from four to five months, were very nearly normal on palpation. Mr. Knight said he would be very interested to hear of any similar cases which members might have seen.

He went on to discuss osteo-chondritis affecting the hip joint of the dog. He said that in the past six years records of about 54 cases had been collected. The condition was described variously as von Perthe's disease, Legg's disease, Calvé's disease and osteo-chondritis deformans juvenilis coxa. Earlier acquaintance with the abnormality had suggested that lameness must be permanent, but with more experience it had been learned that, in at least some cases, lameness was entirely lost. The lesion was an aseptic necrosis and deformity of the proximal femoral epiphysis, the clinical symptoms being lameness, prominence of the great trochanter and shortening with adduction of the affected limb or limbs. The onset was usually at about five or six months, the smaller breeds such as West Highland and Cairn terriers, Corgis and Pekingese being apparently most susceptible. Causation was uncertain but inhibition of blood supply to the epiphysis by way of the round ligament had been suggested. Markowitz in "Experimental Surgery" referred to the disease having been produced experimentally by ligation of the round ligament. Mr. Knight thought this was confirmed by slight osteo-chondritic changes in the femoral epiphysis which could sometimes be seen on X-ray examination of a hip joint some weeks after successful reduction of dislocation. X-ray negatives of normal hip joints and those affected with von Perthe's disease were shown and stages in the regeneration, over a period of six months, of an osteo-chondritic proximal femoral epiphysis. A negative showing a three months' old fracture separation of the femoral epiphysis demonstrated that, in spite of such injury, there was no evident deformity or change in the articular head, thus differentiating the condition from von Perthe's disease and supporting the theory that this disease was caused by injury to the round ligament.

Mr. Knight then showed two films of a condition which he suggested might be described as myositis ossificans. The condition amounted to the deposit of heterotopic bone in a crescentic shape adjoining the tuber ischii. An actual case of this abnormality in an aged Pekingese was very kindly brought by Mr. Gerald Plumbly, M.R.C.V.S., at the invitation of Mr. Knight, who said that he knew of only two cases and had operated in the past to remove a bony para-ischial deposit on the left side in the Pekingese demonstrated. A similar condition had now arisen adjoining the right ischium.

Finally two films of ankylosing spondylitis were demonstrated, one affecting an aged mongrel which was also suffering from mega colon and the other affecting an Airedale dog about six years. The disease was not uncommonly met in old dogs and did not necessarily cause symptoms except when vertebral ankylosis was advanced.

Mr. W. R. Muir spoke about his work on the cases described by Mr. Knight. It seemed that leontiasis ossea in the dog was due to an inadequate intake of calcium. This conclusion was not likely to pass unchallenged since it would naturally be wondered why the lesions arising from a dietary deficiency of calcium should be confined to the lower jaw-bone. This difficulty could be removed only by closer investigation of other cases and by the carrying out of laboratory experiments designed to reproduce the disease. In the meantime, however, attention might be drawn to two or three points which might well throw some light on the problem.

Firstly, the development of leontiasis ossea seemed to be associated, in time at least, with the maturation of the sex glands. Thus, in the cases so far encountered, the disease had occurred only in dogs between five and seven months of age. Likewise, in human beings, the disease made its first appearance soon after puberty. The sex hormones, particularly oestrogens, were known to influence calcium metabolism and to accelerate, according to the circumstances, either the mobilization or the deposition of calcium in the bones. Thus, a level of dietary calcium which was just sufficient to prevent clinical signs of skeletal disorder in the immature growing animal might well prove inadequate at the time of sexual development and the accompanying rise in general metabolism under the influence of the newly secreted sex hormones. Secondly, the jaw-bone experienced an extremely active mineral metabolism, the turnover of calcium and phosphorus proceeding as rapidly as, if not more rapidly than, in any other bone in the body. Bearing these points in mind, it might not be surprising to find that the jaw-bone was the only bone to exhibit lesions when the diet was partially deficient in calcium at the onset of sexual development.

The diagnosis of calcium deficiency in these canine subjects affected with leontiasis ossea rested upon the results of blood, urine and food analyses and upon the improvement which had followed the raising of the dietary calcium intake. For example, the following data were obtained for a typical case. The serum calcium was 9 mg. per 100 ml. This level of serum calcium would probably be regarded by some authorities as falling within the normal range, since it was occasionally recorded in dogs showing no clinical signs of skeletal disease. However, serum calcium levels as low as 9 mg. per 100 ml. were very seldom encountered in dogs on diets of ample calcium content and it would be better to accept 10 to 11 mg. per 100 ml. as the normal range of serum calcium. In fact, he would suggest that the normal level of serum calcium in dogs round about six months of age was between 10·5 mg. and 11 mg. per 100 ml. A tendency to hypocalcaemia was encountered in such states as nephritis with phosphate retention, hypoparathyroidism, certain disorders of the liver and deficiencies of vitamin D and/or calcium. The presence of nephritis, liver disease and parathyroid dysfunction could be ruled out and since the affected subject was receiving ample vitamin D in the form of halibut liver oil, the low level of serum calcium could be taken to reflect a low level of dietary calcium.

The urine from the same subject contained only 3·5 mg. of calcium per 100 ml. whereas the limited data which he had so far collected would indicate that dogs with normal blood calcium levels or receiving diets adequate in calcium usually excreted urine containing 10 to 15 mg. of calcium per 100 ml. Provided the volume of urine was normal, the concentration of calcium in the urine tended to reflect the level of blood calcium. The observed low levels of calcium in the blood and urine were therefore in accord with each other.

The affected dog (and its kennel mates also affected in varying degrees) was maintained on a daily diet of approximately 6 oz. of biscuit and 7 oz. of meat supplemented with halibut liver oil and small amounts of other vitamin preparations. Sometimes, the biscuit was partly replaced by bread. Muscle meat was always deficient in calcium, the average content being only 0·04 per cent. The biscuit was analysed and found to contain 0·19 per cent. So far as he knew, the minimum calcium requirement of the dog had not been precisely stated, but it would seem that the calcium content of the canine diet should be between 0·4 and 0·5 per cent. of the dry matter. The diet of the affected dog therefore contained no more than half, and sometimes less than half of the desirable amount of calcium to ensure adequate nutrition. Doubtless, the absence of generalized skeletal disease could be attributed to the high intake of vitamin D (in the form of sunlight and halibut liver oil) and to the presence of an adequate but not excessive amount of phosphorus in the diet since both these factors would favour the maximum utilization of the dietary calcium. It was pertinent to note there that the blood phosphorus was at the normal level of 4 mg. of inorganic phosphorus per 100 ml.

Since a dietary deficiency of calcium appeared to be the main if not the sole cause of the jaw-bone disease, the addition of 1½ oz. of bone meal to each 6 lb. of biscuit was prescribed. This supplement raised the calcium content of the diet to about 0·6 per cent. of the dry matter. In the weeks following the addition of bone meal and no other supplement to the diet, the condition of the jaw-bones of the affected dogs had gradually improved in the manner already described by Mr. Knight. Moreover, no further cases had developed among other dogs in the same kennels. No doubt, the rate of recovery could have been accelerated by the administration of twice the amount of bone meal prescribed, but the owner of the dogs was averse to the feeding of a larger amount of bone meal on account of its supposedly constipating effect.

There was presumptive evidence that epiphyseal cartilage became mechanically weaker when the diet was deficient in manganese and, in consequence, yielded more readily to traumatic influences. Since any resulting injury to the limb was not directly due to the dietary deficiency, manganese therapy alone would not be expected to bring about recovery.

Leontiasis ossea occurred in human beings, most frequently in females. It usually appeared during the 'teen ages and thereafter continued to progress slowly and intermittently throughout life. In spite of much clinical, radiological, biochemical and pathological investigation, neither the cause of the disease nor a really satisfactory method of treatment had been discovered. The attention of the medical profession might usefully be drawn to the encouraging results obtained with dogs. They might find it worth while to examine the possibility that the condition arose from an inadequate intake of calcium at the critical period of pubertal development and that its progressive development resulted from the persistence of an inadequate or borderline intake of calcium throughout life, possibly owing to dietary habits and preferences. Should this hypothesis prove correct, then the administration of calcium phosphate or a diet very rich in these minerals would be expected to effect a gradual recovery of the patient.

Mr. Tichehurst said that several months ago he had been called to see an adult Alsatian which had trouble in passing faeces. Examination revealed a rectal diverticulum full of faeces. Posterior to this mass was a semilunar piece of "bone" about two inches long which was lying quite freely in the subcutaneous tissue. Although at first he suspected this to be a foreign body there now appeared little doubt that this was a case of myositis ossificans.

Major Kirk described a case in a five-year-old Labrador retriever which could not open its mouth. Even under nembutal anaesthesia, the mouth could not be forced open one-eighth of an inch. The trismus appeared to be definitely mechanical as though fibrous tissue had bound the two jaws together. After many weeks under treatment the mouth could be opened half an inch or more and improvement was slowly progressive. Having heard Mr. Knight on myositis ossificans, he wondered whether these trismus cases were in any way connected with that condition.

He had in his possession a radiograph depicting an enlarged and much sclerosed lower ramus. This, he thought, was osteosarcoma; but it might be necessary to query that diagnosis in view of Mr. Knight's remarks on leontiasis ossea.

In another dog he had seen an extraordinary doubling of the lower rami on each side: in fact a new and prominent rim of bony tissue extended beyond the gums all the way round giving the dog a decided overshot appearance. This might well also be leontiasis ossea.

Of Perthe's disease he had seen ten or twelve cases in 15 years, and it seemed that more than 50 per cent. would automatically recover in about six months' time.

He knew Mr. Knight was sceptical about calcified intervertebral discs causing paraplegia, yet the remarkable and significant fact remained that never had a case of calcified discs come to his notice without an accompanying paralysis.

Colonel Stalker suggested that instead of risking damage to a portable radio they should throw horses. He had seen in Hamburg an enormous X-ray apparatus which gave radiographs of any part of a horse. He was told they also had one in Hanover.

Dr. J. McCunn said that he would like to pay tribute to the work of Major Kirk and Mr. Knight. They were both pioneers in veterinary radiography and had developed from amateur status to a high professional standard. The machine which Major Kirk controlled was not adapted to the more ambitious work which

Mr. Knight was able to attempt at the Beaumont Hospital. Beaumont results compared very favourably with those issuing from human hospitals. Some time ago Professor Formston and Mr. Knight addressed that Society on the subject of osteo-chondritis of the hip—a condition which was frequently encountered in the dog, especially in the Cairn and West Highland types. He (Dr. McCunn) often called it "Cairn disease." At that time he had been surprised that the essayists took such a gloomy view as to the prognosis in these cases. From the purely clinical point of view many of them did quite well and in time there was resolution sufficient to provide almost completely efficient function. The hip joint seemed to be able to accommodate itself extremely well and better than most joints. The best treatment was to keep the joint active. This could be achieved by the aid of massage, both active and passive. It was his custom also to attach a weight to the lower part of the limb and he could, as a result of experience, recommend this idea to the members. The weights were simply pieces of thin sheet lead enclosed in elastoplast and they could be wrapped around the limbs with ease. His custom was to apply them during the day and remove at night. He found that the owners co-operated very well for the job of attending to the weight, regulating the weight, etc., and it gave them a real interest in the treatment.

As to myositis ossificans, he had met with such cases, but most frequently in horses. In the horse this bone tissue was generally in the form of flattened subcutaneous plaques. He had noted them in the buttocks and in the neck. In his cases they had caused no inconvenience and he had not removed them. He would ask Mr. Knight why was it necessary to remove the piece of bone in this case? He was of the opinion that the disturbance of the site might encourage further deposits.

The leontiasis ossea case was extremely interesting as was also the fact that Mr. Knight and Mr. Muir had evolved a method of treatment which led to resolution. He hoped that these methods would be published, for they might be of great value in human cases. As far as he could remember the condition was classed as incurable in man.

Major Kirk had mentioned the condition called "trismus." This was a name given to a peculiar spastic contraction of the muscles which closed the mouth, particularly the masseters and temporals. He believed that the condition was first described by Professor Wooldridge. He (Dr. McCunn) had seen many cases and he thought that he could tell them the story from the early stages.

The preliminary symptom was a slight dropping of the lower jaw and dribbling of saliva. At this time the temporals and masseters were flaccid. Next these muscles contracted and the mouth was firmly closed, but under an anaesthetic it could still be opened slightly. Next there was wasting of the muscles and the mouth could not be opened even with a lever. It would seem that as the muscle tissue wasted the dense fibrous fasciculae contracted and appeared to increase in amount. These cases were not all hopeless and a fair number resolved. One's greatest difficulty was in keeping the mouth in a reasonably hygienic state, owing to the collection and decomposition of food in the various recesses.

He had found that although it was impossible to give solid or even semi-solid food the animals could suck up liquids.

As regards treatment, if one saw the preliminary paralysis the lower jaw should be supported in a sling. He also gave infra-red treatment and administered Donovan's solution in graduated and increasing dosage.

With reference to calcification of the intravertebral discs, he was of the opinion that this was of no consequence in the majority of cases. If there was evidence of lipping of the vertebral bodies that was another matter and then he thought that trouble might follow. At the same time they must remember that in the horse such a condition could progress to complete ankylosis without causing trouble. If the new bone interfered with the free passage of the intervertebral foramina there might be pressure effects upon the spinal nerves issuing therefrom.

In conclusion, he was hoping that in the near future they might possess an X-ray machine, such as our men had seen in Austria and Germany, for use on the many parts of the larger animals that at present are out of our range and which might then become accessible to X-ray examination.

In reply to Colonel Stalker, Professor McCunn said that Colonel Stalker must remember that in civilian life we could not do just as we pleased, and many owners objected to the casting of their horses. Chloral hydrate intravenously was good and he used it extensively 25 or so years ago. On one occasion he had five horses down at the same time, two castrations and three median neurectomies. He had only had one vein complication. At the same time he would hesitate to give it intravenously to any but the commercial horse. Nowadays he preferred to give chloral *via* the stomach tube and if necessary follow up with chloroform.

Mr. F. C. Gillard endorsed remarks made about modern usage of X-ray but stressed the importance of correct positioning and focusing. Apart from spinal column distortion due to faulty positioning, diagnosis was made more difficult, especially in films of the horse's foot; the navicular bone extremities in this way could be made to show projections simulating the so-called "spurs." Much X-ray work of the horse's foot had satisfied him that a very large number of foot lameness cases were due to pedal ostitis. Many cases which had been sent to him as suspected navicular disease or low ringbone were found to be cases of masked pedal ostitis.

In reply to Major Kirk, Mr. Gillard said he had frequently filled in the cleft and crevices at the side of the horse's frog with vaseline and other agents but did not think this at all necessary. It was not necessary to throw a horse for foot X-ray and there was little risk of damaging the cassette if this were put in a frame made of three-ply wood. The horse could then rest his foot and put weight on it.

THE VETERINARY RECORD

June 7th, 1947

VIS UNITA FORTIOR

THIS motto was most aptly selected by the Royal College of Veterinary Surgeons at a time when great efforts were being made to develop a unified and united profession out of the chaotic conditions pertaining prior to its formation.

Throughout the history of the profession crises have arisen. When unity was present, these crises were successfully overcome, but when there was discord amongst our members and failure to agree on major issues, progress was impeded and the development of the profession arrested.

We are facing a great crisis at the present time. Several major issues are confronting us—the future of veterinary education, the control of unqualified practice and the status of the veterinary staff of the Animal Health Division—and the speed of their resolution will depend in large measure upon our unity. In one respect, at least, never has our unity been stronger and never the need for it greater. Time and again our Council has agreed unanimously to take all steps possible to improve the status of the Animal Health Division, knowing in its wisdom that this is not merely a battle to settle salary scales, but to decide the even more important issue of the whole future status of the profession.

This, in effect, is the crisis before us to-day: its importance cannot be over emphasized. In 1938, we did not actively oppose the new salary scales then decreed by the Ministry, believing, as we did, that it was in the best interests of agriculture to express dissent and then to forge ahead with the prosecution of long-overdue animal health plans. Indeed, we were led to believe that if we agreed to such a course, it would not be long before the salary scales were again revised. The profession was disappointed in both respects; little progress was achieved with animal health measures and no attempt was made to reconsider salaries. Clearly, it is impossible for the Association again to place the profession in this undignified and unprofitable position.

The decision by Council to remove the ban on advertisements for posts within the Animal Health Division is a reply to the direct challenge of the Ministry, who asserted that there would be no difficulty in recruit-

ment when the posts were advertised. The Council is convinced—and we believe rightly so—that no responsible member of the profession will apply for or accept a post with the Ministry until an agreed salary scale has been adopted; nor do we believe any member of the profession can honestly recommend a colleague to apply for such a post.

The Council realizes that its strength lies in the loyalty of individual members and it has sufficient confidence in the esprit de corps of the Association to join battle on those terms. It does not attempt to direct its members or to coerce them to a specific course of action, but it asks them to consider carefully the whole position, with implications so detrimental to the future work of the profession on behalf of the nation. In a word, it trusts to their good sense, reinforced by the corporate loyalty which exists within a profession anxious to carry out a great task efficiently. It relies upon them to remain steadfast in their resolution to secure redress for this ministerial wrong. It behoves us to support those leaders who have borne so much of the fight for so long, now that we are given an opportunity of showing our worth. The loyalty and support of each and every individual is the surest way to success.

CONTROL AND PRESERVATION OF WILD ANIMALS IN AFRICA

"Nearly half the African continent is represented at the most important conference on fauna yet held in Africa," states the Kenya Correspondent of *The Times* in a message sent to his paper from Nairobi on May 18th, which continues: "Only the British Commonwealth and colonial territories are represented, but they include the Union of South Africa, the two Rhodesias, the Sudan and all the east and central African dependencies.

"In nine resolutions the conference has covered the major aspects of the question of the place which wild animals occupy in relation to development, and particularly problems related to the control and conservation of wild life. The conference noted the rapid increase in human population with the consequent demand for land; the educational, scientific, economic, and recreational value of African fauna; and the obligation resting on the various governments to preserve game.

"While recognizing that in Southern Rhodesia the eradication of fauna was a proved method of exterminating the species of tsetse fly *G. morsitans*, it did not eliminate other species which had an equal or greater importance. This method of fly destruction should therefore be tested under more varied conditions. The conference considered that alternative and better methods might emerge from present experiments, including bush clearing and the large-scale use of insecticides. In any event the destruction of game should be undertaken by experts. In view of the part played by wild animals in spreading disease, the conference favours veterinary control of game areas. It also emphasized the great need of more knowledge on specialized branches of biological science. This was best provided by appointing biologists to game departments. In view of the importance of carnivorous animals in maintaining the balance of nature, the conference agreed that protection of the lion, leopard, and cheetah should be given early consideration. Finally the conference strongly emphasized the importance of strengthening the game departments in all territories."

* * * * *

Weekly Wisdom

Let us consider that arbitrary power has seldom or never been introduced into any country at once. It must be introduced by slow degrees, and as it were step by step, lest the people should see its approach. The barriers and fences of the people's liberty must be plucked one by one, and some plausible pretences must be found for removing or hoodwinking, one after another, those sentries who are posted by the constitution of a free country for warning the people of their danger.—Lord Chesterfield: quoted by Mr. Dingle Foot, speaking on "The Preservation of the Rights of the Subjects Bill."

CLINICAL COMMUNICATION

An Outbreak of Acute Mastitis due to Streptococcus faecalis

WM. C. AULD and ERIC PARKER
Wincanton

This outbreak of acute mastitis is recorded, not because of any unusual clinical symptoms, but because the streptococcus identified as the causal organism was of a type not usually associated with mastitis.

The affected herd was a newly licensed T.T. Friesian one, the animals, mainly first calf heifers, having been purchased within the previous two or three months. The herd was at pasture; additional feed was of home produced oats, compound cake, and an ample supply of apple pulp. Milking was by machine.

Within a period of five days, eleven animals (ten of them first calf heifers) showed the usual symptoms of acute mastitis, *viz.*, hard swollen quarter, temperatures 105 to 107 degrees, pulse and respirations accelerated, off feed and milk. The secretion from affected quarters went through all the stages between normal milk and the thin watery straw-coloured inflammatory exudate. In all cases symptoms developed in two to three hours, and all animals affected were at the peak of their production, four to eight weeks calved.

The help of the Ministry's Veterinary Investigation Department was sought, and the cause and probable source of infection investigated. Milk samples were taken from each affected quarter, and some from clinically normal quarters of affected animals. Samples of apple pulp and material from a suspected pasture were also collected for examination.

A streptococcus, which could not immediately be typed, was isolated from each clinically affected quarter sample. No similar streptococcus was isolated from any clinically normal quarter of the affected animals, or from the samples of other material taken.

Separate quarter samples were taken from the 31 milking animals in the herd not so far affected. Three animals produced the untyped streptococcus (one of them in three quarters), and three animals produced *Streptococcus agalactiae*.

All 31 animals were given a protective dose of acute mastitis serum, and the six showing streptococci in the milk samples received two infusions of penicillin, 50,000 units in 4 oz. distilled water for each affected quarter. None of these animals has shown any clinical symptoms.

The affected cases were treated with acute mastitis serum, sulphanilamide and penicillin, the following routine giving best results; 50 c.c. acute mastitis serum subcutaneously, and 2 oz. sulphanilamide orally at the first visit; sulphanilamide repeated in 1 oz. doses twice daily for four days; on the third and fourth days penicillin infused into each affected quarter, 50,000 units in 4 oz. distilled water. Complete recovery took place in three to seven days in all but two cases; these retained a certain amount of swelling for ten and 14 days respectively, and the quarters remained light after recovery. In the few cases where penicillin was infused on the first visit (when the quarter was tense and swollen) it was noticed that recovery took longer.

The first two cases to occur relapsed on the eleventh day. Symptoms were similar, and the same quarter was affected. Samples were again taken, one producing the same un-typed streptococcus, the other surprisingly producing a haemolytic staphylococcus. Both were cleared up by a repetition of the treatment, but the quarter infected with staphylococci atrophied considerably.

Points of interest to us were:—

1. The causal organism, *Streptococcus faecalis*.

2. The acute symptoms in clinical cases compared with the complete absence of symptoms in three animals showing the same organisms in milk samples.

3. The sudden onset and equally sudden end of the outbreak. All cases occurred on five consecutive days, one on the first, one on the second, three on the third, two on the fourth, and four on the fifth.

4. The haemolytic staphylococcus found in the relapse sample.

We are greatly indebted to Mr. A. D. Osborne, of the Ministry's Veterinary Investigation Department, for his interest, work, and advice on the outbreak, to Dr. Stableforth for his typing of the

(*Concluded at foot of next column*)

REVIEW

[**"Bovine Mastitis: A Symposium."** By Ralph B. Little and Wayne N. Plastridge. McGraw-Hill Book Company, 330, West 42nd Street, New York 18, N.Y. Price $7.00.]

Such an extensive literature has grown up relating to mastitis that even the specialist has to spend an appreciable time keeping himself fully informed in his own branch of the subject. Developments during the last few years, however, have brought the mastitis picture more clearly into focus and Little & Plastridge have done a great service by so selecting their material that a concise and fair picture is presented. The book, which is well illustrated, has something to offer to all those who have an interest in this major problem of husbandry. The specialist, the veterinary surgeon, the Public Health official, the creamery manager and the intelligent farmer will all find something in the book of value in their search for the solution of some of their own problems in this field.

The co-editors, who have themselves contributed several sections, have surveyed practically every aspect of the subject—a task which to-day is no mean one. Moreover, they have consolidated their work by giving helpful references at the end of each chapter, and in this respect it is pleasing to note that British workers have been given their fair share of recognition. The serological classification of mastitis streptococci has been recorded by the pen of A. W. Stableforth, whose participation in this book will be appreciated by all.

As one might expect, there are chapters on the bacteriology, pathology, diagnosis and treatment (including penicillin therapy and vaccination), but such practical matters as methods of transmission, influence of environment, hereditary factors, the importance of mastitis to public health, which are subjects of more than passing interest to veterinarians, are well handled. A chapter on the disease in goats is welcome but we regret that there is no comparable one dealing with sheep, an animal more commonly affected in this country than the goat.

Only recently has there been a full realization of the need for studying the anatomy of the udder, and the physiology of milk secretion, in order to come to a fuller understanding of the mastitis problem, and to be able to assess the value of various milking practices in so far as they may influence the health of the udder, and so predispose to mastitis. The theory of the "let-down" of milk is interesting in itself, but the rapid removal of milk when the physiological state of the udder favours it should be encouraged, so that the udder is handled for the minimum of time consistent with adequate milking, thus reducing the chances of injury and contamination. These problems all get a fair hearing.

This book should have a wide appeal to veterinarians and is likely to become a standard text-book for students.

A PHARMACEUTICAL FILM

A film entitled "Take Thou" was presented by Evans Medical Supplies, Ltd., at the British Council Theatre, London, on May 14th. The film deals with the story of pharmaceutical manufacture from the early days of medicine up to modern times and showed details of the care and precision with which medicinal preparations of to-day are produced for medical and veterinary use the world over. Immediately beforehand, directors of the firm welcomed with light refreshments and cocktails those who had been invited to the preview, among whom medical, veterinary and pharmaceutical interests were well represented, including the National Veterinary Medical Association and the Veterinary Educational Trust.

organism concerned, and to Messrs. A. D. Osborne and C. D. Wilson for the following information on the characters of *Streptococcus faecalis*:

It is a non-haemolytic streptococcus which gives the following biochemical reactions: Acid is produced in inulin, mannite, raffinose, salicin, sorbitol, trehalose, glucose, lactose, and saccharose. Acid and clot are produced in litmus milk, and a reduction of 1 in 20,000 methylene blue occurs after 48 hours, possibly earlier. A temperature of 60° C. for 30 minutes fails to kill the organism. Serologically the majority of strains isolated from the milk samples gave a precipitin reaction with Lancefield's group D antiserum. The streptococci were in diplococcal formation in the smears made from the milk samples, and were present only in small numbers.

ABSTRACTS

[**Multiplication of *B. anthracis*, *Cl. chauvoei* and *Pasteurella* in Animal Carcases with a note on the Rate of Cooling of Carcases.** Minett, F. C. (1945.) *Ind. J. vet. Sci. and Anim. Husb.* **15**. 99-108. (2 text-figs.).]

1. Observations were made to determine the extent to which these organisms might multiply in carcases and so increase the numbers available for distribution by carrion feeders. Tissue, generally bone marrow, was taken immediately after the animal had expired and again after the carcase had been stored for six hours or more at air temperatures of 60° F. to 70° F. or above. The tissue was taken in such a way as to minimize sampling errors. With *B. anthracis* and *Past. septica* agar pour plates were used, five plates from each dilution; with *Cl. chauvoei* five meat-liver tubes were sown from each dilution and the count estimated from Halvorson and Ziegler's tables, with frequent checks of the identity of the organism.

2. *Past. septica* and *Cl. chauvoei* continue to multiply for some hours after death. With acute pasteurellosis in rabbits this continues for about six hours, after which their numbers appear to remain stationary up to about 48 hours when they begin to decline. At the peak the numbers may reach 2,000 million per gm. bone marrow. With blackquarter in sheep and guinea-pigs, at the time of death the organisms outside the lesion of inoculation are usually in the vegetative state. After some increase in numbers—of variable degree but sometimes 50- to 230-fold—they sporulate. If death is delayed, some may have already sporulated before death. The fresh local lesion contains enormous numbers of spores; a culture may develop from an amount estimated at 0·0000001 gm.

3. With anthrax, cultural results were erratic and there was no evidence that *post-mortem* multiplication is a constant feature.

4. Rate of cooling of carcases was estimated with minimum thermometers inserted through small skin openings on to the liver surface or into thigh muscle. Results are illustrated by graphs. Warm climates favour retention of body heat in freshly dead animals. While it is known that in general the rate of cooling is influenced by many factors, it was found that at 61° F. to 65° F. small carcases, *e.g.*, rabbits, cool to air temperature level in about 12 hours, and larger carcases, *e.g.*, sheep, in about 24 hours.

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[**The Action of Photosensitizing Agents Isolated from Buckwheat.** Wender, S. H. (1946.) *Amer. J. vet. Res.* **7**. 486.]

The literature on fagopyrism or buckwheat poisoning is reviewed and a number of other photosensitizing plants are also mentioned. A full discussion of work on the aetiology of fagopyrism appears and mention is made of the isolation from buckwheat (*Fagopyrum esculentum*) of three separate substances with photosensitizing properties. The author has investigated the effect of feeding each of these substances separately to white guinea-pigs and then exposing the animals to sunlight. The various symptoms produced are described. Wender found that each of the three substances isolated from buckwheat produced photosensitization in white guinea-pigs.

F. A.

LIVESTOCK DECLINE: REDUCTION IN ALL CLASSES

A fall of 1,390,000 in British livestock, compared with 1946, is shown in the March agricultural returns for England and Wales issued by the Ministry of Agriculture. The Ministry points out that when the returns were due numbers of farms were under deep snow or flood waters, and in any case do not cover the heavy sheep losses of March and April.

Every class of livestock shows reduction as compared with a year ago. Even for dairy cattle, cows and heifers in milk or in calf show a reduction of 47,000. Taking all classes of cattle and calves together there is a fall of 86,000. The decline in sheep is 961,000 and the already depleted stocks of pigs show a further fall of 296,000. Poultry, not included in the livestock total, show a decrease of 2,219,000.

NOTES AND NEWS

Diary of Events

June 7th.—Meeting of the Biochemical Society at the Medical School, Hospitals Centre, Birmingham, 15, at 1.30 p.m.
June 10th.—Scientific Meeting of the Zoological Society of London, at Regent's Park, N.W.8, 5 p.m.
June 11th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 2.30 p.m. (Abstracts Sub-committee, 1.45 p.m.)
June 11th.—Summer Meeting of the Lancashire Division, N.V.M.A., at Chester. (See Notice.)
June 12th.—Meeting of the Central Veterinary Society at the Royal Veterinary College, N.W.1, 2 p.m.
June 13th.—R.A.V.C. Annual Dinner, Grosvenor House, London.
June 17th.—Annual Meeting of the Research Defence Society at Manson House, Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W.1, at 3.15 p.m.
June 18th and 19th.—N.V.M.A. Committee Meetings, 36, Gordon Square, W.C.1.
June 19th.—Meeting of the Western Counties Division, N.V.M.A., at Dartington Hall, Totnes, 2 p.m.
June 20th.—N.V.M.A. **Council Meeting,** at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2.
June 25th.—Meeting of the South-Eastern Division, N.V.M.A., at Frant, Nr. Tunbridge Wells (The Wellcome Veterinary Research Station), 11 a.m.
June 25th.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at Galashiels (Royal Hotel), 2.30 p.m.
June 26th and 27th.—R.C.V.S. Written Examinations.
July 28th—Aug. 1st.—N.V.M.A. Annual Congress in Edinburgh.
July 31st.—12th Annual Meeting of the Royal (Dick) Veterinary College Alumnus Association, at the Royal British Hotel, Princes Street, 7 p.m.

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R.C.V.S. Council Election Result

The following result of the Royal College of Veterinary Surgeons' Council Election was declared at the Annual General Meeting of the Royal College, held at 10, Red Lion Square, London, W.C.1, on Tuesday last:—

Name	*Votes*
T. M. Mitchell	814
G. H. Wooldridge	771
J. W. Procter	743
G. N. Gould	734
H. W. Steele-Bodger	712
J. B. Buxton	667
H. Sumner	664
J. Share Jones	606
(The above-named were declared elected)	
H. Burrow	499

Representative of Eire

It was also announced that Mr. P. F. Dolan had been returned unopposed as the representative of Eire on the Council.

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Ministry of Agriculture—Veterinary Appointments

Further Divisional Support for N.V.M.A. Stand

At its meeting on Friday, May 30th, the Royal Counties Division of the N.V.M.A. passed the following Resolution unanimously:—

"The Royal Counties Division of the National Veterinary Medical Association places on record its full support of the N.V.M.A. in its efforts to improve the status and salaries of the whole-time veterinary staff of the Ministry of Agriculture and Fisheries.

"This Division wishes to stress the great importance to this country of an efficient and contented official veterinary service."

It was decided to send copies of this resolution to Members of Parliament whose constituencies fall within the area of the Royal Counties Division.

N.V.M.A. Congress, Edinburgh

The programme of the Association's Edinburgh Congress appears on page 288 of this issue. In view of the limits set by caterers the Provisional Committee would strongly urge members to make immediate use of the Ticket Sheet published on advertisement page viii to apply for tickets for the functions, excursions, etc., in which they wish to participate.

A few rooms, mainly double- and twin-bedded, are still available to the Provisional Committee in various hotels in Edinburgh. Anyone who has difficulty in obtaining accommodation is advised to make early application to the Local Secretary, Professor A. Robertson, Royal (Dick) Veterinary College, Edinburgh, 9.

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Oversea Veterinary Appointments

The N.V.M.A. for some time past has been endeavouring to persuade certain oversea Government authorities to improve the conditions of service for veterinary officers. In some it has been unsuccessful up to the present and certain oversea Governments may have decided to advertise for veterinary officers in the lay press and elsewhere; these advertisements may appear at any time.

It is suggested that any members of the N.V.M.A., seeing such advertisements and being interested should communicate with the General Secretary, N.V.M.A., 36, Gordon Square, W.C.1. An explanation will then be given of the reasons which have caused the Association to decline to accept advertisements of these posts for insertion in *The Veterinary Record.*

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Children's Visit to Denmark

Through its President, Dr. N. Plum, the Danish Veterinary Association has once again extended an invitation, *via* this Association, to the children of British veterinary surgeons to visit Denmark during the summer holidays and has, in fact, already sent a list of Danish veterinary surgeons who would like to be their hosts. In view of the success of last year's visit, the N.V.M.A. has accepted this kind offer and the General Secretary would be pleased to hear from any members who would like their children to go. Arrangements can again be made through Cook's, but there is some urgency in the matter of fixing travelling facilities and those interested are asked to write in to the Association without delay.

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Research Defence

Professor Wooldridge to give Paget Memorial Lecture

The attention of our readers is directed to the announcement, made in our Notices Columns, of the delivery by Professor George H. Wooldridge, F.R.C.V.S., M.R.I.A., of the sixteenth Stephen Paget Memorial Lecture under the auspices of the Research Defence Society. The subject of the (illustrated) lecture is "What Animals Owe to Research," and it is to be given in association with the Annual General Meeting of the Society at Manson House, Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W.1, on Tuesday, June 17th, at 3.15 p.m.

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PERSONAL

Birth.—Farrell.—On May 24th, 1947, to Fay, wife of Adam V. Farrell, M.R.C.V.S., 19, Terregles Street, Dumfries, a daughter.

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Illness of Mr. William Nairn.—We learn with much regret that so shortly after his retirement, announced in our issue of May 24th, Mr. William Nairn has had to undergo a serious abdominal operation in Blowgowrie Hospital. Our readers will join us in expressing the earnest hope that he will thereby be restored to a full measure of health and strength.

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U.S. Professorship for Mr. Frank H. Manley.—We learn that Mr. Frank H. Manley, M.V.SC. (LIV.), M.R.C.V.S., has been appointed to the Professorship of Veterinary Medicine at the Auburn State University of Alabama. A former student of Liverpool University, of which his uncle, Emeritus Professor John Share Jones, was for a great many years director of veterinary education, Mr. Manley has served in Uganda, Nigeria and Cyprus, under the Colonial Office, spending three years in each of those countries. He was for some years engaged on public health work in Britain, and was elected a Fellow of the Royal Sanitary Institute.

. . . . .

The *Isle of Wight County Press* records that Mr. G. H. Moon, M.R.C.V.S., of Ryde, has been elected an Associate of the Royal Photographic Society. His photographs of birds taken in the Island won him this distinction.

R.C.V.S. OBITUARY

Howie, George, F.R.C.V.S., Capt. late R.A.V.C., Divisional Inspector, Animal Health Division, Ministry of Agriculture, 2, Golden Square, Aberdeen. Graduated Edinburgh, July 7th, 1916; Fellowship, May 7th, 1921. Died May 29th, 1947; aged 55 years.

We record the death of Mr. George Howie with much regret. An appreciation will appear in an early issue.

Hutchinson, George, 25, Breck Road, Poulton-le-Fylde, Lancs. Graduated London, July 14th, 1882. Died May 14th, 1947.

Morse, Margaret Doreen Ramey, Inspector, Ministry of Agriculture and Fisheries. Graduated Liverpool, July 9th, 1940. Died at Llanbedr Hall, Ruthin, May 26th, 1947; aged 31 years.

Reynolds, Harry Finch, Capt. late R.A.V.C., of Torquay. Graduated London, December 20th, 1887. Died May 23rd, 1947.

Williams, Hugh, of Tycroes, Anglesey. Graduated Glasgow, April 18th, 1887. Died May 16th, 1947.

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Miss M. D. R. Morse, M.R.C.V.S.

An Appreciation

Her many friends throughout the profession will receive with much regret the news of Miss Morse's death which occurred on Monday, May 26th. Her death occurred after a long and serious illness, throughout which she displayed the utmost courage and fortitude.

At the age of 15 Miss Morse was involved in a motoring accident in which she was very seriously injured; this did not deter her from pursuing the career she had set her mind upon and she accordingly came to the Veterinary School at the Liverpool University, where she soon became extremely popular, not only in the Veterinary School, but throughout the University. The fact that she was elected Lady President of the Guild of Undergraduates of the University in her final year is evidence of the high esteem in which she was held.

After qualifying she spent several periods in general practice, and joined the veterinary staff of the Animal Health Division of the Ministry of Agriculture and Fisheries in the beginning of 1943. We were not, it may be said frankly, unduly enthusiastic at that time about the prospect of having a lady colleague, but she very quickly won the hearts of all of us, not only by her grace and charm of manner, but also by her extreme efficiency and absolute loyalty. She had the confidence of all members of the agricultural community in Cheshire with whom she came into contact, and one was struck by the many sympathetic enquiries from them during her illness.

She took the keenest interest in all matters concerning the profession, and by her untimely passing the profession has lost one who seemed destined to give a valuable life's work.

We, who had the privilege of working with her, have lost a grand colleague, and the deep sympathy of her many friends throughout the profession will be extended to her mother in the great loss she has sustained.

The funeral service, which was held at Landican Cemetery on Thursday, May 29th, was attended by relatives and friends, including representatives from the University of Liverpool. Members of the profession who attended included her colleagues from the Cheshire Divisional Staff, and amongst those present were Mrs. K. G. R. Kelly, Messrs. W. Kendrick, G. Willis, G. V. Slinn, E. A. Comer, B. Brown, E. A. Pearce, D. Lloyd-Jones, C. A. Stewart, D. S. Campbell, J. Smith and E. R. Callender (representing the Lancashire Veterinary Association).

E. R. C.

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GENERAL OBITUARY

Sir F. Gowland Hopkins, O.M., F.R.S.

[Contributed]

At rare intervals genius arises and conquers difficulties which would otherwise have smothered epoch-making developments in some branch of human activity. The death of Gowland Hopkins* forcefully reminds us of the fact that the world of science in general and that of biochemistry and nutrition in particular would not have extended their boundaries as they have done since the turn of the century if it had not been for the exploration, guidance and stimulation of his genius. The whole scientific world has paid him tribute—none more just than the assertion that he himself would have been most proud to know that, in the eyes of his fellow workers, his greatest contributions were those which would not appear in the official records—that he had inspired and encouraged generations of younger men, and that he had founded the world's most distinguished, and almost its earliest, school of biochemistry.

Born at Eastbourne in 1861, Gowland Hopkins early lost his father and having been put into the London office of a provincial insurance company at the age of 17, very soon, with the help of a small legacy, took his education into his own hands, determined to follow his scientific bent. In turn he assisted Percy Faraday Frankland at the Royal School of Mines at South Kensington, attended lectures at University College, became an associate of the Institute of Chemistry, and then received an appointment as analytical chemist under Sir Thomas Stevenson, the Home Office analyst and medical jurist at Guy's Hospital. He was considered at one time as destined to succeed Stevenson, but wisely decided to join the medical school at Guy's and become medically qualified, being encouraged by his prompt election as the first holder of the research studentship formed in memory of Sir William Gull. Towards the end of the century Hopkins was called to Cambridge by Sir Michael Foster, then professor of physiology, to develop what was then termed chemical physiology and he remained in Cambridge for the remainder of his life. He held Foster in the most affectionate regard throughout his life, and several of his most important papers were contributed to the *Journal of Physiology*, of which Foster was founder and editor. Hopkins's small income from Foster's department was supplemented by Emmanuel College, which made him a supervisor of its medical students. His first great discovery there was the isolation and identification with S. W. Cole in 1901 of the amino-acid tryptophane, and later with Edith G. Willcock he published one of the earliest researches on nutritionally essential amino-acids, showing that zein, an incomplete protein of maize, could be improved nutritionally by the addition to it of tryptophane.

In this connection, a contributor to *The Lancet* observes: "Animal feeding studies of this kind with purified diets soon convinced Hopkins, as it had convinced others before, that normal growth could not be sustained on the known 'major constituents' of diets, and that still unidentified 'acessory food factors' were needed in addition. But he went one step further than any of his predecessors in suggesting that these accessory factors present in *normal diets* were one and the same as the substances needed to prevent *deficiency diseases*."

In 1902 a University Readership in Chemical Physiology was created for Hopkins. It bore fruit in 1906, when he laid the foundation of two new studies. With Walter Fletcher (later the first Secretary of the Medical Research Council) he described the production of lactic acid in muscular activity and its subsequent removal by oxidation. This work on lactic acid production was one of the two pillars on which modern knowledge of carbohydrate metabolism is based, the other being the recognition of the part phosphate plays in such changes by Harden and Young. His succeeding studies in dietetics, to which reference is made above, were, however, even more important.

Hopkins gave up his posts at Emmanuel in 1910 when Trinity College elected him to a Praelectorship in Physiological Chemistry with a Fellowship. In the same year he conducted with H. Savory a meticulous examination of the condition of proteinuria first observed by Bence-Jones in 1848. Next year Emmanuel placed him on the list of honorary Fellows. In 1914 a Professorship of Biochemistry was created for him, to terminate with his tenure of office. The position of biochemistry in the University was put on a still firmer foundation in 1921 by the munificent bequest of Sir William Dunn, and Hopkins became the first Sir William Dunn Professor of Biochemistry, his previous posts lapsing.

The discovery of glutathione was announced in a report to the Food Investigation Board of the Department of Scientific and Industrial Research: from glutathione followed other important studies relating to tissue oxidation. In his later years Hopkins took an active part in the direction of State research. He was an original member of the Medical Research Council, retiring in 1930, and the first Chairman of its Accessory Food Factors Committee. He was also a member of the Advisory Committee on Nutrition set up by the Ministry of Health in 1931, and as such was involved in the controversy with the B.M.A. Committee over the number of calories and grammes of first-class protein adequate for a sufficient diet.

He was elected a Fellow of the Royal Society in 1905, and became its President in 1931. He was knighted in 1925, was Chairman of the British Association in 1933, and Vice-President

* On May 16th, at Cambridge.

of the Chemical Society in 1921. Among his numerous honours and distinctions may be counted the Royal Medal and the Copley Medal of the Royal Society, the Baly Medal of the Royal College of Physicians, the Society of Apothecaries' Medal, and the Albert Medal of the Royal Society of Arts. He received the Nobel Prize for medicine in 1929, and was appointed to the Order of Merit in 1935. In 1938 he was awarded the Conway Evans Prize by the presidents of the Royal Society and the Royal College of Physicians.

Although Hopkins's scientific work only indirectly touched veterinary knowledge, he nevertheless showed great keenness for the advancement of the profession. His work as Chairman of the Cattle Diseases Committee and membership of the Medical and Agricultural Research Council gave him an insight into the possibilities open to veterinary investigators both in "fundamental" and in applied research. He never failed to evince interest in veterinary problems and was most anxious to see improvement in the facilities available for veterinary education and research.

Perhaps this notice may end on a personal note as the writer was privileged to work for four years in "Hoppy's Lab." in Cambridge —along with 40 other research workers. All of us revered him and accepted him without thought as our "father." There are many, including the writer, who owe much of what little success they have made of their lives to "Hoppy's" stimulation and wise guidance. His name and work will live for all time: it is up to us who knew him to perpetuate the gentleness of his spirit and the wisdom of his judgments.

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ARTIFICIAL INSEMINATION: NORTHERN IRELAND BILL

An Artificial Insemination of Animals Bill has been introduced in the Northern Ireland House of Commons. The Bill empowers the Northern Ireland Ministry of Agriculture to establish and operate centres for the purpose of eliminating diseases from livestock, including poultry, and of developing and improving the breeding of stock by the practice of artificial insemination. The Bill also provides for the conducting of research and experiments.

Under the Bill it is proposed to give the Ministry power to control the practice of artificial insemination in respect of cattle, goats, swine, horses, domestic fowl, turkeys, geese and ducks.

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R.C.V.S. ANIMAL MANAGEMENT EXAMINATION

List of Successful Candidates

(*Continued from page 275*)

London:

Ahmad, S. A.
Allen, P. V.
Bateson, W. B.
Betts, A. O.
Blampied, N. le Q.
Bongard, A. L.
Bradley, G. E.
Brown, K. J. N.
Claydon, R. K.
Clifford, H. R.
Corder, John.
Davies, D. C. (credit).
Davies, W. E. O.
De Gruchy, P. H.
Evans, D. A.
Fumpston, W. A.
George, J. K.
Gibson, Miss M. A.
Gregory, B. M.
Hannaford, P. J.
Harley, P. J.
Harrison, V. A.
Heath, J. S.
Hide, David.
Horniman, E. A.
Jackson, B. N. (credit).
Jacques, P. A.
Jones, I. I. (credit).
Jones, J. E. T.
Kirkby, W. W.
Lakin, C. N. S.
Mack, R. M.
Minson, Miss J. M. (credit).
Morgan, T. L. A. (credit).
Newing, C. R.
Owen, D. C. (credit).
Paine, G. D.
Paterson, W. M. R.
Pittaway, E. M.
Polley, M. J.
Price, M. C.
Ray, B. R.
Smalley, P. R.
Smith, A. C.
Spurry, J. R.
Stockwell, Miss J. I.
Stokes, Simon.
Symons, G. B.
Thomas, L. S.
Thomas, W. B.
Threlkeld, J. M.
Tuckett, P. C.
Wadsworth, Frank.
Wheeler, Miss E. C. (credit).
White, Miss K. S.
Wiggins, G. S.
Williams, B. M.
Withers, J. O.

* * * * *

UNIVERSITY OF EDINBURGH'S FARM RESEARCH CENTRE

The Scotsman, in its issue of May 22nd, records that Earl De La Warr, Chairman of the Agricultural Research Council, on the previous day paid high tribute to the "magnificent conception" of the University of Edinburgh in its far-reaching proposals for the great school of rural economy at The Bush and Dryden estates. They had given a lead, he said, in helping this country and, indeed, the world, to face the fundamental problem of feeding themselves—a problem which would have to be faced sooner or later.

Lord De La Warr was speaking at a luncheon held at Bush House, where the University entertained members of the Agricultural Research Council now meeting in Scotland and visiting several research stations in the area. Earlier in the day the visitors were conducted round the estates of The Bush and Dryden, recently acquired by the University for development and extension of many aspects of research and teaching. They also saw the Edinburgh and East of Scotland College of Agriculture's experimental farm at Boghall, close by The Bush, which will form an integral part of the scheme designed to cover animal genetics and many other branches of agricultural research.

Sir Ernest Wedderburn, who presided in the absence of the Principal, Sir John Fraser, welcomed the Agricultural Research Council and representatives of other bodies who had entered into partnership with the University in the venture which was being inaugurated there. He dealt historically with the ancient estates of The Bush and Dryden, and paid tribute to the interest of the former owners in developing the land. No more suitable area for the development of teaching in agriculture and forestry could be found, he thought.

The Royal (Dick) Veterinary College would also participate, and they hoped to be able to lease from the War Department some hill land which would give them an area of varied agricultural conditions where laboratory theory may be tested by experiments in the fields.

The school which would be developed would comprise the central teaching farm run jointly by the University and the College for students in agriculture, horticulture and veterinary science. The enterprises developed would include beef cattle, dairy cattle, sheep, pigs and poultry, and agricultural implements and machinery, and students would learn something of the economics of agriculture, and it was hoped that much data would be produced on the costs of the production of food both for animals and human beings. The work would have a sociological significance, for the development of forestry would be closely inter-related in such a way as to provide work at all seasons for casual workers.

The animal breeding division would take over two areas, and the Scottish Society for Research in Plant Breeding will also have more scope. The Animal Diseases Research Association would take over another area and the Scottish Institute of Agricultural Engineering hope to make use of the land for testing machinery under ordinary farm conditions.

All these research and field stations would be in close association with the central teaching unit, and on the managing body would be representatives of these organizations, the University and the Department of Agriculture for Scotland, which had taken a deep interest in the scheme.

"We look forward to the day," concluded Sir Ernest, "when there will be developed a school—the first of its kind in this country—which will attract students and graduates who will desire to take advantage of the facilities which could not be found elsewhere."

The Scotsman concludes its report with the intimation that among the developments mentioned, in addition to those already referred to, which would be part of the varied activities at the school, were artificial insemination and farriery.

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NATIONAL AGRICULTURAL ADVISORY SERVICE APPOINTMENTS

The following appointments in the N.A.A.S. are included amongst those recently announced by the Minister of Agriculture:—

Headquarters.—Chief Livestock Husbandry Officer, Mr. H. Twinch; Deputy, Mr. W. P. Middleton; Assistant Deputy, Mr. H. L. Shrimpton.

Provincial Livestock Husbandry Officers.—Northern, Mr. C. W. Strutt, Mr. R. J. Richards (Deputy); Yorks and Lancs, Mr. K. N. Findlay; West Midland, Mr. T. Cooper Robinson; East Midland, Mr. R. J. Kerr; Eastern, Mr. Fernley Smith; South-East, Mr. J. MacKintosh, Mr. E. V. Cope (Deputy); South-West, Mr. Austin Jenkins, Mr. H. W. Tomlinson (Deputy); Wales, Mr. R. O. Smith, Mr. T. Gee (Deputy).

The addresses of the Provincial centres and sub-centres where the above officers are normally stationed, are as follows:—

Northern: Elswick Hall, Elswick Park, Newcastle-on-Tyne (telephone: Newcastle-on-Tyne 35207). *Yorks and Lancs.*: Quarrydene, Weetwood Lane, Leeds 6 (Leeds 52636). *West Midland*: Woodthorpe, Wergs Road, Tettenhall, near Wolverhampton (Wolv.

22331). *East Midland*: Shardlow Hall, Shardlow, near Derby (Shardlow 212). *Eastern*: Anstey Hall, Trumpington, near Cambridge; temporary address, St. Regis, Montague Road, Cambridge (Cambridge 54237). *South-East*: Chiltern Court, St. Peter's Avenue, Caversham, Reading (Reading 72691 and 72771). *South-West*: Bracken Hill, Leigh Woods, Bristol (Bristol 38466). *Wales*: Crosswood, Aberystwyth (Crosswood 1); Bangor Sub-Centre, Bryn Adda, Bangor (Bangor 893); Cardiff Sub-Centre, University College, Cardiff (Cardiff 9193).

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WORLD FOOD COUNCIL POTENTIALITIES

Sir John Boyd Orr, Chairman of the Food and Agriculture Organization, who is touring South American countries to ascertain their food production plans and their need for machinery to increase this production, is (states *The Times* Correspondent in Brazil) encouraging over the results which can be achieved by the World Food Council, providing, as he thinks likely, that the 18 great nations implement their intention of supporting its work. The message continues:—

"There will be a world food scarcity for many years, Sir John Boyd Orr told your Correspondent, and the means of meeting it can only come from measures to encourage higher output in the producing countries. Since there is also a hunger for industrial products, he predicts a strong recommendation by the World Food Council for the granting of priority to exports of tractors, refrigerating plant, and other machinery.

"He distrusted long-term international price agreements, and cited the recent abandonment of Anglo-Argentine negotiations for a five-year wheat contract to illustrate his view that the world's food needs could be best met by short-term contracts based on the knowledge of stocks and prospects in each producing region, which would be available to the World Food Council.

"Sir John Boyd Orr believed that, however well the World Food Council may function, Great Britain can best help herself by planning to produce as much food as possible for many years to come. Himself an experienced farmer, he predicts that the set-back to British agricultural production caused by the last winter's crisis will prove to be smaller than has been feared at home."

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International Food Proposals

The Agricultural Correspondent of *The Times* reports that at the final session of the conference of the International Federation of Agricultural Producers held in Holland, agreement was reached on points to be submitted to the August meeting of the Food and Agriculture Organization of the U.N. The conference asked F.A.O. to prepare an analysis of national programmes to stabilize agricultural production and prices, and strongly advocated commodity agreements on a multilateral basis. The "greatest possible importance" is attached to the early conclusion of a wheat agreement.

Mr. James Turner, the English N.F.U. president, was re-elected president of the I.F.A.P., and it was decided to appoint a principal officer of the Federation at a suggested salary of £3,500 with a permanent headquarters staff.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Sheep Scab:

Denbighshire.—Cefnhir Faur, Llanrhaidr-yn-Mochnant, Oswestry, Denbighshire (May 27th).

Merioneth.—Llawrcilan, Llandrillo, Merioneth (May 23rd).

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VETERINARY EDUCATIONAL TRUST

The Veterinary Educational Trust has received £447 15s. 2d. from the Milk Marketing Board, this being the second payment on account of subscriptions towards the Trust collected by the Board from its producers.

The Secretary of Birmingham Racecourse Company has sent £421 13s. 2d. to the Trust, arising from the sale of racecards at the meeting early in May.

DEATH AFTER DOG-BITE

"The death of a boy in Hull following the bite of a dog raises several questions not easy to answer," observes *The Lancet* in an annotation published under the above heading in its issue of May 3rd. "According to Press reports,[1] the boy was bitten in the leg, and on the advice of his family went to the hospital 'to have the wound cauterized.' The house surgeon found a deep punctured wound and ordered the injection of 2 c.cm. of gas-gangrene antiserum. Within a few minutes the boy developed dyspnoea, and despite administration of adrenaline and oxygen, he died soon afterwards from anaphylactic shock. This is the third death from a similar cause to be noticed in these pages during the past twelve months,[2] and the only essential difference is the positive evidence in this case that most of the possible precautions against the accident were taken: the quantity of serum given suggests that it was a concentrated product and therefore less likely to give rise to an anaphylactic reaction, and adrenaline was used when the boy became ill, though the amount and time of the injection are not mentioned in the account of the inquest. We may well ask how far these tragedies should modify our treatment of the deep, lacerated and presumably infected wound.

"It has long been recommended that tetanus and gas-gangrene antitoxins should be used prophylactically in these cases. The evidence that the first diminishes the incidence and severity of the specific infection is convincing, and most doctors have at some time had reason to regret that it is not more generally used in civilian practice. It seems desirable, at any rate in rural areas, that active immunization with tetanus toxoid should be as easily available to the public (and especially to children) as prophylaxis against diphtheria, but a long time will elapse before this practice is sufficiently widespread to justify withholding tetanus antiserum from the potentially infected patient. To obtain proof of the efficacy of gas-gangrene antiserum has been more difficult, though war experience suggested that large prophylactic doses lower the death-rate from this cause. Since antiserum is given in every accident case at some hospitals, and in none at others, it might be possible to obtain some comparable figures bearing on its utility as a routine precaution.

"A last question suggested by the Hull tragedy concerns the state of public opinion about rabies in this country; for it was the fact that the boy's wound was due to a dog-bite that suggested to his family that he should attend the hospital to have it cauterized. This is presumably a legacy of the days when rabies was as common here as it is in continental Europe. Unless one has lived in a country where rabies occurs, it is hard to understand the feeling of alarm provoked not only by the bite of an animal but even by the propinquity of one whose behaviour appears out of the ordinary. During the last half-century there have probably been more cases of pneumonic plague than of rabies in England, but the fear of dog-bite persists as presaging something worse than a nip and an embarrassing hole in the trousers. This fear is at present unnecessary, though there is still quite a serious risk of the reintroduction of rabies into Britain by air travellers smuggling their pets.[3] Yet perhaps the public are 'righter than they know.' There have been several reports of fatalities from infection with *Pasteurella septica* following the bites of dogs and other animals,[4] and it is probably wise to treat the bite of any animal as potentially more dangerous than most other infected wounds."

(1) *Hull Daily Mail*, March 29th and April 1st.
(2) *Lancet*, 1946, i, 694; 1946, ii, 354.
(3) *Ibid*, 1944, ii, 628.
(4) Allott, F. N., Cruickshank, R., Cyrlas-Williams, R., Glass, V., Meyer, I. H., Straker, E. A., Tee, G. *J. Path. Bact.* 1944, **56**, 411: Cooper, T. V., Moore, B. *Lancet*, 1945, i, 753.

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DISEASE FROM CONTAMINATED SYRINGES

In veterinary circles, much discussion has been heard regarding the possibility of transmitting disease by the use of a contaminated syringe. Such diseases as anaplasmosis, bovine piroplasmosis, canine piroplasmosis, leukocytozoon infections, Rickettsia infections, and virus diseases are examples of those that could be carried by a contaminated syringe. It is apparent that a syringe used in the intravenous administration of drugs is grossly contaminated, but a syringe used for intramuscular and subcutaneous medication is sometimes considered safe for a series of injections provided an exchange of sterile needles was made. Hughes,[1] investigating "postpenicillin jaundice," found that a syringe used to give intramuscular and subcutaneous injections is frequently contaminated with blood from the patient.

[1] Hughes, R. R. Syringe contamination following intramuscular and subcutaneous injections. (1946.) *J. Royal Army Med. Corps.* **87**. 156-168.

In a series of experiments, Hughes made injections with 1·0 c.c. of normal saline into the buttock muscles and in the subcutaneous tissue of the abdominal wall of man. The needle was then withdrawn from the tissue and immediately removed from the syringe. Successive drops of saline from the syringe were examined microscopically for red blood cells. Standard syringes, 2 c.c., 5 c.c., 10 c.c. and 20 c.c. capacity, and standard needles, gauges 19, 21 and 23, were used. Results:—

1. The syringe was contaminated with blood from the patient in 39 (34 per cent.) of 114 injections given.
2. Contamination was more frequent and severe when the muscle was in a state of contraction.
3. The degree of contamination diminished with each succeeding drop of saline examined.
4. Contamination of the syringe occurred in all three sizes of needles. (*Note*: The plunger of the syringe was not withdrawn after the insertion of the needle.)

This work shows that a single subcutaneous or intramuscular injection of 1 c.c. may lead to contamination of the syringe used. —*N. Amer. Vet.*

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INTERNATIONAL HORSE SHOW

When the King and Queen visit the International Horse Show at the White City Stadium on Wednesday, July 9th, Princess Margaret will present the National Pony Society's championship medal to the rider of the best child's riding pony in the show. The occasion of the Royal visit is the first of two gala days on which international jumping events between several continental nations will be the features.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents should write as briefly as possible and letters should not exceed 350 words.

PENICILLIN IN PURULENT INFECTIONS

Sir,—With reference to Mr. Auchterlonie's Clinical Communication on the use of penicillin by intracapsular injection in two cases of joint ill, the information supplied should be of great value to practitioners, who are continually having to deal with purulent infections of the various joints. But, in fact, it is the action one would expect, as it has been proved that on injection (*i.e.*, subcutaneously or intravenously) penicillin rapidly penetrates to all parts of the body in the blood stream, with the exception of the meninges, pleura, serous membranes of the joints, and the mammary gland. Therefore in the treatment of septic conditions of the meninges, serous membranes of the joints, etc., it is necessary to inject penicillin at the particular local site.

It would appear that the most successful form of treatment in "joint ill," involving more than one site, would be general treatment with sulphonamide by mouth, and local intracapsular injections of penicillin at the various joints involved.

As an indication of the impermeability of certain tissue to penicillin when in the circulating blood, it was found by Barker & Dussault in 1945 that the injection of 2,681,000 units of penicillin subcutaneously into a cow over a period of four days, resulted in no penicillin being detected in the excreted milk.

Yours faithfully,

G. C. Brander.

Department of Medicine,
Royal Veterinary College,
Streatley, Berks.
May 24th, 1947.

. . . . .

REDUCTION OF TORSION OF THE BOVINE UTERUS

Sir,—With reference to the question of torsion of the bovine uterus which arose in the reply to the discussion on Mr. P. M. Sutton's paper "Caesarean Section in the Bovine," appearing in the *Veterinary Record* to-day, it will interest several of the speakers to know that reduction is certainly carried out with the animal in the standing position. In over 20 years' experience in agricultural practice, with well over a hundred cases of torsion, I have never, so far, had to cast an animal and roll. Two men are required to help, one on the right side with clenched fists pushing downwards and inwards about the middle of the abdomen, the other on the left side pushing upwards and inwards low down on the flank. These men push alternately, each at the rate of about one push per second, the idea being to get the uterus and foetus on the swing. If the cervix is sufficiently open to admit a hand to the uterus, the operator can give tremendous help from there; if the cervix is completely closed he has to operate from the rectum. A live foetus is the greatest help. With this aid and the uterus swinging slightly, very little pressure from the operator will cause the foetus to wriggle into the normal position and take the uterus with it. In every case I have dealt with the torsion was anti-clockwise. Anaesthesia in any form is a disadvantage during reduction.

Yours faithfully,

Wm. C. Auld.

Southill,
Wincanton,
Somerset.
May 24th, 1947.

. . . . .

NEWCASTLE DISEASE

Sir,—Dr. Gordon somewhat misunderstands my letter of May 10th which was merely expressing surprise that no reference had been made to vaccination as an effective protection against Newcastle disease. I think that it would have been of value to have informed the profession generally that those researches (initiated at Weybridge and published by Iyer & Dobson) have been followed by considerable success in the field: in particular that of the "Indian" vaccine which saved the poultry industry of Palestine in the severe outbreak of Newcastle disease in 1945-46.

While the Ministry of Agriculture rightly feel that further research work on the subject of vaccination against Newcastle disease is necessary in this country, the poultry industry is naturally keen to know of any efforts which are being made as an alternative to the slaughter policy should the latter not succeed. I think, therefore, that it would have been useful to have primed practitioners and veterinary officials with a brief statement on the present position concerning Newcastle disease and vaccination.

Yours faithfully,

W. P. Blount.

The British Oil & Cake Mills, Ltd.,
Unilever House,
Blackfriars,
London, E.C.4.
May 27th, 1947.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
April. 16th to 30th, 1947	7	—	77	—	3	—
Corresponding period in—						
1946	4	2	—	—	—	26
1945	6	10	—	1	4	44
1944	11	—	—	—	—	33
Jan. 1st to April 30th, '47	27	83	138	1	18	14
Corresponding period in—						
1946	41	22	—	4	34	218
1945	43	73	—	5	37	375
1944	86	19	—	5	58	214

Note.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at April 30th, 1947, was as follows:—

England	Wales	Scotland	Total (Great Britain)
7,737	10,467	8,741	26,945

EDINBURGH CONGRESS, 1947

The following is the Programme of the Association's Congress to be held at the Royal (Dick) Veterinary College, Summerhall Square, Edinburgh, 9, from July 27th to August 1st (inclusive), except where otherwise stated.

SUNDAY, JULY 27TH

7.30 p.m. to 9.30 p.m.	Reception by Scottish Metropolitan Division in Royal (Dick) Veterinary College.

MONDAY, JULY 28TH

10.30 a.m.	Opening of Congress by Rt. Hon. Sir J. I Falconer, Lord Provost of Edinburgh.
11 a.m.	Opening of Exhibition of Drugs and Surgical Instruments, etc., by President, N.V.M.A.
11.30 a.m.	Council Meeting.
2 p.m.	Paper: "Toxicological Problems in Veterinary Practice." By G. F. Boddie, B.Sc., M.R.C.V.S., F.R.S.E. Openers of discussion: H. H. Green, D.Sc., and T. M. Mitchell, M.R.C.V.S., D.V.S.M. Chairman: J. N. Ritchie, B.Sc., M.R.C.V.S., D.V.S.M. Recording Secretary: J. S. S. Inglis, B.Sc., M.R.C.V.S.
2 p.m.	Ladies' Outing to Zoological Gardens.
8 p.m. to 1 a.m. ..	President's Reception and Dance (Freemasons' Hall, 96, George Street, Edinburgh, 2).

TUESDAY, JULY 29TH

9.30 a.m.	Paper: "Retention of the Placenta in the Bovine." By A. J. Kennedy, B.Sc., M.R.C.V.S. Openers of discussion: A. S. Chapman, M.R.C.V.S., and J. M. Rorrison, M.R.C.V.S. Chairman: R. W. Johnston, M.R.C.V.S. Recording Secretary: A. Thomson, M.R.C.V.S.
11 a.m.	V.V.B.F. Ladies' Guild Annual General Meeting.
2 p.m.	Visit to Laboratories of the Animal Diseases Research Association, Moredun Institute, Gilmerton, or to Corporation Markets and Slaughter-house, Gorgie, Edinburgh.
7.30 p.m.	Civic Reception by the Corporation of the City of Edinburgh. (City Chambers, High Street, Edinburgh.)

WEDNESDAY, JULY 30TH

9.30 a.m.	Paper: "The Immunology and Epidemiology of Virus Diseases." By M. Crawford, M.R.C.V.S. Openers of discussion: I. A. Galloway, D.Sc., M.R.C.V.S., and D. R. Wilson, D.Sc., M.R.C.V.S., D.V.S.M., F.R.S.E. Chairman: D. C. Matheson, M.R.C.V.S., D.V.S.M., F.R.S.E. Recording Secretary: J. W. Emslie, B.Sc., M.R.C.V.S.
10 a.m.	Ladies' Golf Tournament at Liberton Golf Course.
1.45 p.m.	Congress Photograph.
2.30 p.m.	Ladies' Outing to Lauriston Castle.
2.30 p.m.	Annual General Meeting.
7.30 p.m. for 8 p.m...	Annual Dinner in Freemasons' Hall.

THURSDAY, JULY 31ST

9.30 a.m.	All-day Excursion to Trossachs.
10 a.m.	All-day Excursion to Borders.
10 a.m.	Men's Golf Tournament at Luffness Golf Course.
8.30 p.m. to 1 a.m. ..	Ladies' Veterinary Benevolent Guild Dance.

FRIDAY, AUGUST 1ST

10 a.m.	Closing Meeting.
11 a.m.	Council Meeting.
2 p.m.	Conducted Tour of Royal Mile, Edinburgh.

Form of application for tickets will be found on advertisement page viii.